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OFFICE OF MYCOLOGY AND DISEASE SURVEY

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FRUIT DISEASES

DEVELOPMENT OF APPLE SCAB (VENTURIA INAEQUALIS)

The following additional reports concerning apple scab in 1930 have been received.

New York (report from State Coll. Agr. Weekly News Letter, Apr. 7): Counts of 300 perithecia on McIntosh leaves at Ithaca made on April 6 show practically one quarter of the fruiting bodies contained colored ascospores in at least part of their asci. Examination of trap slides is not complete at the time of writing but no ejected ascospores have so far been found.

Virginia: Ascospores of the apple scab fungus (Venturia inaequalis) are mature in the Staunton and Piedmont sections. A light ejection of spores occurred at Staunton on April 3. In 1929 the first ejection of ascospores and the first infection of scab occurred on April 11 at Staunton, Virginia. The months of February and March of this year have been very dry in this section and we naturally expect a great deal of rain in April and May and therefore more scab than usual. (R. H. Hurt, Apr. 3)

Ohio: In case you are interested in apple scab development, I would like to say that at the present time in the southern half of the state we have from 8 to 10 per cent mature spores. In the northern half of the state it is somewhat higher, running from 7 to 28 per cent in some cases. In southern Ohio the fruit bud development is early delayed dormant for the early varieties, like Delicious, Stayman and Duchess. In central and northern Ohio the buds are still too delayed for any spray service work. We are getting good response from our radio work and we believe that it is a very timely way of getting this work to the growers. (A. L. Pierstorff, Mar. 31)

STRAWBERRY SPECIMENS WANTED

Dr. A. G. Plakidas is continuing his investigations of mosaic-like diseases of strawberry in cooperation with the Office of Horticultural Crops and Diseases this year. As he indicated in his report of last year (Pl. Dis. Rptr. 13: 129-131. Sept. 15, 1929) he would like to have more living specimens of plants showing yellowing and mosaic-like troubles for planting out near Washington, D.C. this spring.

Collaborators or readers of this publication will be contributing materially to the solution of this strawberry disease problem by sending suspected samples.

Material should be addressed to the Plant Disease Survey, Bureau of Plant Industry or to Dr. A. G. Plakidas, Horticultural Crops and Diseases, Bureau of Plant Industry, Washington, D. C. Care should be taken to see that each variety is properly labeled and that the plants are well packed to prevent drying out. A description of the disease should be sent also. Reports on specimens received will be made at the conclusion of the work.

LUMPY RIND OF CITRUS

By A. S. Rhoads, Associate Pathologist,
Florida Agricultural Experiment Station.

An unusual amount of fruit exhibiting an abnormal growth condition known as lumpy rind was observed at several points in the interior of peninsular Florida. The trouble was confined largely to trees on rough lemon stock. It occurs chiefly on grapefruit and has been observed only occasionally on oranges. This abnormal fruit condition is characterized by the occurrence of from one to several, more or less prominent, hard lumpy places in the rind, usually on one side of the fruit. In severely affected fruits a large area of the rind on one side may be characterized by a hard, thickened, and more or less lumpy condition. In such cases, the normal growth of the fruit seems to be retarded on the affected side and the rind is further characterized by the oil cells being abnormally small and closely crowded. Upon cutting fruits affected by lumpy rind, there is found in the center of the considerably thickened rind under each lumpy place a center or hard, brownish abnormal tissue surrounded by a watery zone of tissue which, in turn, may be surrounded by normal rind. Where considerable areas of the rind are affected by the lumpy condition, hard brownish tissue in the rind will be found to be co-extensive. This abnormal condition occupies a median position in the rind but may attain such an extensive development as to involve practically all of the white portion of the rind. Occasionally, gum pockets occur at the centers of the hard, brownish spots.

Fruits showing this lumpy rind condition are distinct from those showing bumps caused by mealy bugs or aphids. This abnormality does not appear to be due to insect injuries to the rind but rather to be the result of an abnormal growth condition. But little is known concerning the conditions with which the development of the lumpy rind condition is associated. An unusually large amount of this trouble was observed on grapefruit during the season of 1929-30, it occurring even on fruit in well-cared for groves. In other cases, however, the lumpy rind condition of the fruit has been observed to occur on trees that had lapsed into a chronic decline and exhibited more or less dead roots following overbearing in conjunction with other devitalizing influences. It has also been observed to occur on trees exhibiting a chronic frenching and decline following applications of lime. Although the pulp of the fruits exhibiting the lumpy rind condition is not affected, the hard, lumpy condition of the rind impairs the market value of such fruits.

GRAPEFRUIT BLOTCH

By A. S. Rhoads, Associate Pathologist,
Florida Agricultural Experiment Station.

An unusual type of fruit blotch that is new to the writer was observed in January, 1930, in a number of groves about 9 years of age on rough lemon stock in the vicinity of Auburndale, Polk County, Florida. The trouble was confined to grapefruit (mostly Marsh Seedless with some Silver Cluster) and develops in midwinter as a series of pronounced greenish blotches which later become dark brown. The blotches are mostly irregular in shape but average about 3/16 inch in diameter. They closely resemble the greasy spot or so-called "greasy melanose" that has been of common occurrence on citrus foliage for many years. The cause of the latter trouble has never been determined but is thought to be physiological. In severe cases the blotches may be so densely crowded as to be more or less continuous over considerable areas of the fruit. They develop in greatest abundance on the lower sides and bottom of the fruit. The trouble occurs characteristically on the fruits in the interior of the tree, both in the center of the crown and down near the ground, but rarely on the fruits that are borne on the outer part of the crown. It occurs more or less sporadically through the groves, being of but slight occurrence on the fruits of some trees but of extensive occurrence on the fruits of others. In the worst cases observed, from 50 to 75 per cent of the fruit exhibited more or less of the blotchy appearance, much of the fruit being so badly blotched as to result in it being culled in the packing house. The development of this fruit blotch appears to start about midwinter and progresses rapidly with the occurrence of warm weather. This trouble has occasioned more or less fruit loss and reduction of grade during the past 3 years. The blotches do not become sunken to any extent nor does the trouble seem to result in any breakdown or decay of the affected fruit.

Despite careful search and numerous inquiries, nothing in the way of tree condition, cultural practices, fertilization, or spraying could be consistently correlated with the occurrence of this trouble. Several of the trees that exhibited an abundance of the blotch on the fruit exhibited an unusual development of the greasy spot on the foliage, even the terminal foliage. However, other trees were observed that had a considerable development of the fruit blotch but exhibited very little of the greasy spot on the foliage. The trouble on the fruit does not appear to be caused by any organism but rather to be a physiological trouble. The grapefruit trees in the groves that exhibited the fruit blotch were in fairly good condition but the fruit was rather poor in quality and exhibited a pronounced greenish cast. Other groves in the vicinity, where the fruit was of much better quality and color were free from the trouble.

DISEASES OF VEGETABLES

SUSCEPTIBILITY OF SPINACH VARIETIES TO DOWNY MILDEW (PERONOSPORA EFFUSA) AS OBSERVED IN MASSACHUSETTS, 1929.

The following report was sent in by E. F. Guba (June 17, 1929).

Downy mildew was prevalent in June after heavy rains in May, also late in the summer in damp situations or where irrigation was practiced extensively. In a planting at the Field Station (Waltham) there was a marked difference in the susceptibility of spinach varieties but Lamb's quarters (Chenopodium album) showed no signs of infection. The following list shows the comparative susceptibility of varieties of spinach.

Variety	Infection
Hot Weather (Woodruff)	Trace
Nobel Giant Leaved (Harris)	Slight
Nobel Giant Leaved (Stokes)	Slight
King of Denmark (Rice)	Slight
Long Standing Bloomsdale (Rice)	Slight
Emerald Standing (Stump & Walter)	Slight
Large Thick Leaf Viroflay (Harris)	Slight
Victoria (Harris)	Slight
Early Giant (Griswold)	Moderate
Princess Juliana (Eberle)	Slight to trace
Princess Juliana (Harris)	Moderate
Princess Juliana (Henderson)	Slight to trace
King of Denmark (Forbes)	Severe
King of Denmark (Griswold)	Severe
King of Denmark (Harris)	Severe
Savoy Special (Eberle)	Moderate
Bloomsdale Savoy (Hart)	Moderate
Savoy Long Standing (Perry)	Slight to trace
Long Standing Bloomsdale (Hart)	Slight
Long Standing Savoy Leaved (Forbes)	Trace
Long Season (Harris)	Trace
Long Standing Bloomsdale (Harris)	Trace
Long Standing Savoy (Woodruff)	Trace
Henderson Long Season	Trace
Sutton Long-standing Round	Slight to trace
Lamb's Quarters (Chenopodium album)	None

SPRAYING INCREASES YIELD OF CANTALOUPES IN NORTH CAROLINA - 1929

The following is a report of spraying demonstrations conducted in this state for the control of cantaloupe mildew (Pseudoperonospora cubensis).

The first spray was applied July 1, 1929, which was about a week after the first fruits were set. The second and last spray was applied on July 17, or about a week to ten days before the average beginning of the ripening period. The sprays were applied with a knapsack sprayer and Kayso was used as a spreader. In the first spray home-made Bordeaux was used, while in the second Commercial Bordeaux was substituted because it was easier to use with a small outfit.

While it was impossible to secure accurate yield records comparing the sprayed with the unsprayed plots, the results were outstanding in favor of two applications of Bordeaux. The season was a favorable one for the development of disease and the leaf spot diseases were very destructive on both the unsprayed plots and the adjacent unsprayed field. On the sprayed plots the vines retained their foliage until the crop was properly matured and ripened, while on the unsprayed plots the leaves dried up about the middle of the ripening period and the remaining melons failed to ripen properly or to attain their best quality.

Ten different varieties were included in the spraying demonstration and the only one showing any outstanding disease resistance was Abbott's Peerless Pearl. (E. B. Morrow)

SPECIMENS RECEIVED

CROWN GALL (BACTERIUM TUMEFACIENS) ON JUNIPER

Specimens of Juniperus sabina showing galls on the crown and roots were received from L. E. Miles of Mississippi. Bacterium tumefaciens was isolated by Miss Nellie A. Brown from the galls on the stock at and below the graft. This report is unusually interesting because of the fact that the host is a conifer. It seems to be the first record of crown gall on Juniperus sabina.

HOLLYHOCK RUST (PUCCINIA MALVACEARUM)

An unusual report of the occurrence of hollyhock rust with specimens was received from E. W. Mendenhall in Ohio (March 15). He stated that the disease was quite bad in a greenhouse in Springfield, where young plants were started.

OTHER SPECIMENS

Catenularia fuliginea Saito from moldy dates, Riverside, California. Collected by L. J. Klotz, March 24, 1930. Det. Dr. Charles Thom.

Cytospora chrysosperma causing canker of apple and Carolina poplar, from Elko, Nevada, collected by Mark W. Menke, March 31. Another specimen on poplar from Lovelock Nevada, collected by A. J. Reed, March. All determinations by G. G. Hedgcock. This species of Cytospora does not seem to be very commonly reported on apple.

Lophodermium amplum Davis on Pinus banksiana, Manhattan, Kansas, March 25. Collected by C. O. Johnston, determined by W. W. Diehl. Common on P. banksiana, some trees badly affected and should be destroyed. P. nigra and P. sylvestris in the same nursery free from the disease. (Johnston).

Phyllosticta nicotianae Ell. & Ev. on tobacco, Berkeley County, South Carolina, collected by G. M. Armstrong, March 31, determined by R. W. Davidson.

Sphaeropsis ellisii Sacc. on Pinus sylvestris, Manhattan, Kansas. Collected by C. O. Johnston, April 2, determined by W. W. Diehl.